IN THE CLAIMS

Please amend the claims as follows:

1. (Currently Amended) An optical channel monitor, comprising:

an optical input port;

a photodetector disposed in an optical path communicating at least intermittently with said optical input port;

an optical filter disposed in said optical path between said optical input port and said photodetector; ~~and~~

an optical band splitter disposed in said optical path between said optical filter and said photodetector;

an optical reference system in optical communication with the optical band splitter between said photodetector and said optical filter and configured to generate a reference signal; and

a comparison device configured to compare a measurement signal with said reference signal by generating a first wavelength-to-voltage function for the reference signal and generating a second wavelength-to-voltage function for the measurement signal, wherein

said second wavelength-to-voltage function is generated using a wavelength transform function consisting of relating the wavelengths in the reference optical signal with the wavelengths in the measurement signal with the following equation: $\lambda_{m-1} = (m/m-1)\ \lambda_m$ where m and m-1 represent the order of the wavelength passband, m being an integer number greater than 1, λ_m and $\lambda\text{-}1_m$ are wavelengths transmitted at the m^{th} and $m\text{-}1^{th}$ order respectively.

2. (Original) An optical channel monitor according to claim 1, wherein said optical filter is a multibandpass filter.

3. (Original) An optical channel monitor according to claim 2, wherein said multibandpass filter is a scanning Fabry-Perot filter.

4. (Original) An optical channel monitor according to claim 1, further comprising a second photodetector in optical communication with said optical band splitter, wherein said optical band splitter directs light received in one wavelength band to the first mentioned photodetector and directs light received in a second wavelength band to said second photodetector.

5. (Original) An optical channel monitor according to claim 4, further comprising an optical switch disposed in said optical path between said optical filter and said optical input port.

6. (Cancelled).

7. (Currently Amended) An optical channel monitor according to ~~claim 6~~claim 5, wherein said optical switch is constructed and arranged to selectively break and close said optical path between said optical input port and said optical filter, and to ~~beak~~ break and close a reference optical path between said optical reference system and said optical filter.

8. (Currently Amended) An optical channel monitor according to ~~claim 6~~claim 1, wherein said optical reference system comprises a broadband optical source and a reference gas cell ~~disposed between said broadband source and said optical switch~~.

9. (Original) An optical channel monitor according to ~~claim 6~~claim 1, wherein said optical reference system comprises a broadband optical source and a plurality of fiber Bragg gratings arranged in series.

10. (Original) An optical channel monitor according to claim 8, wherein said gas cell comprises a reference gas selected from the group comprising hydrogen cyanide and acetylene.

11. (Original) An optical channel monitor according to claim 3, further comprising a Fabry-Perot drive source.

12. (Original) An optical channel monitor according to claim 11, wherein said drive source comprises an electrical oscillator.

13. (Original) An optical channel monitor according to claim 12, wherein said electrical oscillator generates a triangular electrical signal.

14. (Original) An optical channel monitor according to claim 1, further comprising a second optical band splitter disposed in said optical path between said optical input port and said optical filter.

15 – 17 (Cancelled).

18. (Original) An optical channel monitor according to claim 14, further comprising a second photodetector in optical communication with said second optical band splitter.

19. (Original) An optical channel monitor according to claim 14, wherein said optical filter is a scanning Fabry-Perot filter.

20. (Original) An optical channel monitor according to claim 19, further comprising a filter drive source.

21. (Original) An optical channel monitor according to claim 20, wherein said drive source comprises an electrical oscillator.

22. (Currently Amended) An optical channel monitor according to claim 21, wherein said electrical oscillator generates ~~an~~a triangular electrical signal.

23. (Original) An optical channel monitor according to claim 18, wherein said band splitters direct light to separate photodetectors depending on a wavelength of light incident thereon.

24. (Currently Amended) A method of measuring characteristics of an optical signal, comprising:

filtering a reference beam of light with a tunable multibandpass filter;

redirecting portions of said filtered reference beam of light to a first photodetector to produce a reference signal;

filtering at least a portion of an optical signal with said tunable multibandpass filter;

redirecting portions of said filtered portion of said optical signal to a second photodetector to produce a measurement signal; and

determining characteristics of said measurement signal based on a comparison with said reference signal, wherein

said comparison of said measurement signal with said reference signal comprises generating a first wavelength-to-voltage function for the reference signal and generating a second wavelength-to-voltage function for the measurement signal, and

said second wavelength-to-voltage function is generated using a wavelength transform function consisting of relating the wavelengths in the reference optical signal with the wavelengths in the measurement signal with the following equation: $\lambda_{m-1} = (m/m-1)\ \lambda_m$ where m and m-1 represent the order of the wavelength passband, m being an integer number greater than 1, λ_m and $\lambda\text{-}1_m$ are wavelengths transmitted at the m^{th} and $m\text{-}1^{th}$ order respectively.

25. (Original) A method of measuring characteristics of an optical signal according to claim 24, wherein said filtering a reference beam of light comprises scanning said tunable multibandpass filter over a wavelength range.

26. (Original) A method of measuring characteristics of an optical signal according to claim 24, wherein said filtering at least a portion of an optical signal comprises scanning said tunable multibandpass filter over said wavelength range.

27. (Cancelled).

28. (Cancelled).

29. (Currently Amended) A method of measuring characteristics of an optical signal according to ~~claim 28~~claim 24, wherein wavelength λ_m is a wavelength selected from wavelengths in the reference optical signal and λ_{m-1} is a wavelength selected from wavelengths in the measurement signal.

30. (Currently Amended) A method of measuring characteristics of an optical signal according to claim 24, further comprising:

determining a temperature of said multibandpass filter during said filtering a reference beam of light; and

determining a temperature of said multibandpass filter during said filtering at least a portion of said optical ~~filter~~signal.

31. (Currently Amended) An optical channel monitor, comprising:

an optical input port;

a photodetector disposed in an optical path communicating at least intermittently with said optical input port;

an optical filter disposed in said optical path between said optical input port and said photodetector;

an optical switch disposed in said optical path between said optical filter and said optical input port; ~~and~~

an optical reference system in optical communication with said optical switch, said optical reference system comprising a broadband optical source and a plurality of fiber Bragg ~~grattings~~ gratings disposed between said broadband source and said optical switch; and

a comparison device configured to compare a measurement signal with a reference signal by generating a first wavelength-to-voltage function for the reference signal and generating a second wavelength-to-voltage function for the measurement signal, wherein

said second wavelength-to-voltage function is generated using a wavelength transform function consisting of relating the wavelengths in the reference optical signal with the wavelengths in the measurement signal with the following equation: $\lambda_{m-1} = (m/m-1)\ \lambda_m$ where m and m-1 represent the order of the wavelength passband, m being an integer number greater than 1, λ_m and $\lambda\text{-}1_m$ are wavelengths transmitted at the m^{th} and $m\text{-}1^{th}$ order respectively.

32. (Original) An optical channel monitor according to claim 31 further comprising:

an optical band splitter disposed in said optical path between said optical filter and said photodetector.

33. (Original) An optical channel monitor according to claim 31, wherein said plurality of fiber Bragg gratings are temperature monitored by temperature sensors.

34. (Currently Amended) A method of measuring characteristics of an optical signal, comprising:

filtering a reference beam of light with a tunable multibandpass filter;

redirecting portions of said filtered reference beam of light to each of first and second photodetectors according to wavelengths of said portions of filtered reference light to produce first ~~a~~ and second reference signals;

filtering at least a portion of an optical signal with said tunable multibandpass filter;

redirecting portions of said filtered portion of said optical signal to each of said first and second photodetectors to produce first and second measurement signals; and

determining characteristics of said first and second measurement signals based on comparison of said first and second reference, wherein

said comparison comprises generating a first wavelength-to-voltage function for the first reference signal and generating a second wavelength-to-voltage function for the second reference signal, and

said second wavelength-to-voltage function is generated using a wavelength transform function consisting of relating the wavelengths in the reference optical signal with the wavelengths in the second reference signal with the following equation: $\lambda_{m-1} = (m/m-1)\lambda_m$ where m and m-1 represent the order of the wavelength passband, m being an integer number greater than 1, λ_m and $\lambda\text{-}1_m$ are wavelengths transmitted at the m^{th} and $m\text{-}1^{th}$ order respectively.

35. (Currently Amended) A method of measuring characteristics of an optical signal, comprising:

filtering at least a portion of an optical signal with an optical filter having a first passband substantially equal in wavelength to a wavelength of said optical signal and a second passband at a wavelength different from said optical signal;

detecting said filtered portion of said optical signal to generate a measurement signal; filtering a reference light beam with said optical filter, said reference light beam having light of a wavelength within said second passband of said optical filter;

detecting said filtered reference light beam after it has passed through said optical filter at said second passband to generate a reference signal; and

determining a characteristic of said optical signal based on a comparison of said measurement signal to said reference signal, wherein

said comparison of said measurement signal with said reference signal comprises generating a first wavelength-to-voltage function for the reference signal and generating a second wavelength-to-voltage function for the measurement signal, and

said second wavelength-to-voltage function is generated using a wavelength transform function consisting of relating the wavelengths in the reference optical signal with the wavelengths in the measurement signal with the following equation: $\lambda_{m-1} = (m/m-1)\ \lambda_m$ where m and m-1 represent the order of the wavelength passband, m being an integer number greater than 1, λ_m and $\lambda\text{-}1_m$ are wavelengths transmitted at the m^{th} and $m\text{-}l^{th}$ order respectively.

36. (Currently Amended) A wavelength division multiplexed optical communication system, comprising:

a plurality of transmitters; an optical multiplexer in communication with said plurality of transmitters;

an optical transmission line in communication with the optical multiplexer;

an optical demultiplexer in communication with the optical transmission line;

a plurality of receivers in communication with the optical demultiplexer; and

an optical channel monitor optically coupled between said plurality of transmitters and said plurality of receivers, said optical channel monitor comprising:

an optical input port;

a photodetector disposed in an optical path communicating at least intermittently with said optical input port;

an optical filter disposed in said optical path between said optical input port and said photodetector; ~~and~~

an optical band splitter disposed in said optical path between said optical filter and said photodetector;

an optical reference system in optical communication with said optical switch; and

a comparison device configured to compare a measurement signal with a reference signal by generating a first wavelength-to-voltage function for the reference signal and generating a second wavelength-to-voltage function for the measurement signal, wherein

said second wavelength-to-voltage function is generated using a wavelength transform function consisting of relating the wavelengths in the reference optical signal with the wavelengths in the measurement signal with the following equation: $\lambda_{m-1} = (m/m-1)\ \lambda_m$ where m and m-1 represent the order of the wavelength passband, m being an integer number greater than 1, λ_m and $\lambda\text{-}1_m$ are wavelengths transmitted at the m^{th} and $m\text{-}1^{th}$ order respectively.

37. (New) The optical channel monitor of Claim 1, wherein said comparison device is further configured to iteratively compare said measurement signal with said reference signal over a plurality of temperatures.

38. (New) The optical channel monitor of Claim 31, wherein said comparison device is further configured to iteratively compare said measurement signal with said reference signal over a plurality of temperatures.

39. (New) The method of Claim 34, wherein said comparison further comprises iteratively comparing said measurement signal with said reference signal over a plurality of temperatures.

40. (New) The method of Claim 35, wherein said comparison further comprises iteratively comparing said measurement signal with said reference signal over a plurality of temperatures.

41. (New) The wavelength division multiplexed optical communication system of Claim 36, wherein said comparison device is further configured to iteratively compare said measurement signal with said reference signal over a plurality of temperatures.